

What is claimed is:

1. A plasma display panel having discharge-gas-filled discharge cells each of which includes a phosphor layer formed therein and is formed between two substrates, and producing a display discharge
5 between paired display electrodes and an addressing discharge between one of the paired display electrodes and an addressing electrode in each discharge cell, comprising:

a diamond-containing layer made of an insulation material containing diamond, and formed in a position where the addressing
10 discharge is produced between the one of the paired display electrodes and the addressing electrode in the discharge cell.

2. A plasma display panel according to claim 1, wherein the insulation material forming said diamond-containing layer is a
15 phosphor material of the same color as that of a phosphor material forming the phosphor layer.

3. A plasma display panel according to claim 1, wherein the insulation material forming said diamond-containing layer is an
20 insulation material different from a phosphor material forming the phosphor layer.

4. A plasma display panel according to claim 1, wherein the diamond included in said diamond-containing layer is in powder form.

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5. A plasma display panel according to claim 4, wherein a particle size of the diamond powder ranges from 0.1 μm to 3 μm .

6. A plasma display panel according to claim 1, wherein the diamond is terminated by hydrogen.

5 7. A plasma display panel according to claim 6, wherein the diamond undergoes one of a hydrogen annealing process and a hydrogen plasma annealing process for hydrogen termination.

8. A plasma display panel according to claim 1, wherein the diamond is synthesized at high pressure, or alternatively synthesized by use of implosion techniques.

9. A plasma display panel according to claim 1, wherein the diamond include impurities.

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10. A plasma display panel according to claim 9, wherein the impurities are ones selected from the group of phosphorus, nitrogen, and boron.

20 11. A plasma display panel according to claim 1, wherein the discharge gas includes a hydrogen gas.

12. A plasma display panel according to claim 11, wherein a concentration of the hydrogen gas in the discharge gas is equal to or less than four percentages.

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13. A plasma display panel according to claim 1, wherein said

diamond-containing layer includes diamond deposited by use of a Chemical Vapor Deposition process.

14. A plasma display panel according to claim 1, wherein said
5 diamond-containing layer is formed by use of one of a screen printing method, an ink jetting method, a nozzle discharging method and a spin coating method.

15. A plasma display panel according to claim 1, wherein the
10 addressing electrode is set as a negative pole to produce the addressing discharge.

16. A plasma display panel according to claim 1, wherein the paired
discharge electrodes are formed on one of the two substrates, and
15 the addressing electrodes are formed on the other substrate, and said diamond-containing layer is formed in a position in the phosphor layer facing the addressing electrode.

17. A plasma display panel according to claim 16, wherein said
20 diamond-containing layer is formed in a central position in the phosphor layer facing the addressing electrode.

18. A plasma display panel according to claim 16, wherein said
diamond-containing layer is formed over the entire surface of the
25 phosphor layer.

19. A plasma display panel according to claim 16, wherein said

diamond-containing layer is formed over a central portion of the surface of the phosphor layer facing the addressing electrode.

20. A plasma display panel according to claim 16, wherein said
5 diamond-containing layer is formed over a full face between the phosphor layer and the other substrate.

21. A plasma display panel according to claim 16, wherein said
10 diamond-containing layer is formed between a central portion of the phosphor layer and the other substrate.

22. A plasma display panel according to claim 16, wherein the
phosphor layer is constituted by a diamond-containing layer made
by adding diamond to a phosphor material.

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23. A plasma display panel according to claim 16, wherein the
discharge cell is partitioned into a display discharge cell having
the phosphor layer formed therein and provided for producing the
display discharge between the paired display electrodes, and an
20 addressing discharge cell provided for producing the addressing
discharge between the one of the paired display electrodes and the
addressing electrode, and said diamond-containing layer is formed
in the addressing discharge cell.

25 24. A plasma display panel according to claim 23, further
comprising a projecting part formed on the other substrate and
pushing up the addressing electrode in the addressing discharge

cell in a direction of the display electrode formed on the one of the substrates,

wherein said diamond-containing layer is formed in a position covering the addressing electrode pushed up by the projecting part.

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25. A plasma display panel according to claim 23, further comprising a ferroelectric layer formed in a position covering the addressing electrode, formed on the other substrate, in the addressing discharge cell,

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wherein said diamond-containing layer is formed on the ferroelectric layer.

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26. A plasma display panel according to claim 1, wherein one of the paired display electrodes is formed on one of the two substrates, and the other display electrode and the addressing electrode are formed on the other substrate, and said diamond-containing layer is formed in a position covering the addressing electrode.

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27. A plasma display panel according to claim 26, wherein said diamond-containing layer is formed on a part of a portion of the other substrate facing the discharge cell.

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28. A plasma display panel according to claim 26, wherein said diamond-containing layer is formed over the full surface of a portion of the other substrate facing the discharge cell.

29. A plasma display panel according to claim 1, wherein the paired

display electrodes and the addressing electrode located close to the discharge cell with respect to the display electrodes are formed on that one of the two substrates which is located at the rear of the plasma display panel, and said diamond-containing layer is
5 formed in a position covering the addressing electrode in the discharge cell.

30. A plasma display panel according to claim 1, wherein the paired display electrodes and the addressing electrode located close to
10 the discharge cell with respect to the display electrodes are formed on that one of the two substrates which is located on the display screen side of the plasma display panel, and said diamond-containing layer is formed in a position covering the addressing electrode in the discharge cell.